Writing Guide for CDDs/CPDs in 20-30 Pages

***

Principal Reference

February 2015 JCIDS Manual

Note: Per the February 2015 JCIDS Manual (and consistent with the 2012 JCIDS Manual), the maximum page *limit* for Sections 1 through 12 of a CDD/CPD is 45 pages; there is no *minimum* page limit.

This material provides general guidance on *how to* write each of the twelve (12) sections of a CDD/CPD. Each of the documents' sections has been distilled into step-by-step actions to address the *essential* required content. Additionally, corresponding 'call outs' provide a recommended range for how much should be written to each section topic - assuming that what is written *specifically* addresses the *required content* per the JCIDS Manual. This approach forces the writer to *reduce a document to what it must convey,* to the *exclusion non-essential verbiage.*

If the *exact* page suggestions in this guide are used, the resultant CDD/CPD would be in a range between 19 ½ pages – 30 pages long. Document writer(s) may add to them *as and where needed* to ensure their CDD/CPD adequately addresses the content required in the current JCIDS Manual. However, documents supporting ACAT I programs have been approved within the aforementioned page ranges. The task is to *challenge all content* – every sentence or data specific attribute – to make the words/numbers merit (*earn*) their place in these essential, foundational, and enduring documents.

Quote from February 2015 JCIDS Manual

ENCLOSURE C - Initial Identification of Capability Requirements and Associated Capability Gaps

1. Overview.

a. Fundamental goal. The fundamental goal of any approach outlined in this section is for a Sponsor to derive and refine *capability requirements* and associated *capability gaps* – for which a capability solution must be provided either organically or leveraged through the joint force – to accomplish assigned functions, roles, missions, and operations.

b. Use of certified requirements managers. Sponsors will use certified requirements managers, as described in Enclosure A, to monitor and evaluate *capability requirement* identification, including but not limited to the identification of *capability gaps* due to changes in threats, missions, or aging of legacy weapon systems throughout their life cycle.

c. Relation to functions, roles, missions, and operations. Before any action can be taken in the JCIDS process related to reviewing and validating capability requirement documents, Sponsors must first identify *capability requirements* related to their functions, roles, missions, and operations.

Definitions:

Capability Requirement (CR): A specific, measurable, **solution agnostic** task, including quantifiable operational measure(s) of effectiveness (MOEs) identified in *CBA/ICD*

Capability Gap (CG): A CG exists when fielded/planned capability solutions do not fully satisfy a CR

CR Documents: ICD, IS ICD, CDD, IS CDD, CPD, DCR *(formerly called JCIDS Documents)*

Capability Solution: Resolves or mitigates CGs (e.g. solution(s) defined in CDD, CPD, DCR)

Steps for Framing Sections 1, 2 & 3 of a CDD/CPD

Step 1: List **Capability Requirement(s)** (CR(s)) that could be basis for a CDD/CPD
Note: Legacy CR Documents (prior to 2012 JCIDS) may *not* address *CRs* specifically – these may need to be *derived from the existing CR Documents*.

> A CR is a Specific Task with Testable and Measurable Attributes (with quantified operational MOE)
> CRs are output of Strategy to Task (vs. Threat, if applicable) mapping that is done in a CBA. (typically)
> CRs are Solution/Program/CDD/CPD agnostic metrics described in an ICD. (typically)

Step 2: List Capability Gaps (CGs) and Capability Overlaps (COs) from CBA/ICD for above listed CRs

Step 3: Pick small set of CRs, CGs and COs that bound problem CDD/CPD is addressing
> Ensure problem is fully defined at top level (e.g. define range, effect needed, target set, etc.)
> 'Less is more' as long as it is adequate to define problem

Step 4: Cite source CR Documents that contain the CRs identified in Step 3.
> Ensure source CR Documents are on, or put on, KM/DS (N803 can help)
> A source CR Document is an ICD or other document with validated CRs, COs & CGs
Note: CR's can be *further developed/matured* in AoA if CONOPS are revised accordingly

Step 5: Summarize Operational Context defined in source CR Documents listed in Step 4 as it relates to CRs listed in Step 3. Discuss any changes to operational context since the time the source CR documents were validated
> *Ensure **Key Intelligence Support Capabilities** are discussed in Operational Context*

Step 6. List **Threat Assessments** (TA) each source CR Documents is based on. Discuss any changes to TA

Top Level Outline that can be used to frame Sections 1, 2 and 3 of a CDD/CPD

CDD/CPD Section 1		*CDD/CPD Section 2*		*CDD/CPD Section 3*				
Operational Context from Validated Source CR Document		Threat Assessment (TA) listed in source CR Document		Capability Requirement (CR) from source CR Document			Capability Gap (CG) and Overlap (CO) associated with each CR from source CR Document	
#	Name	#	Name	#	Description	Initial Objective	#	Description
1				1			1	
2				2			2	
3				3			3	

Notes:

1. Recommend only listing/discussing CRs and CGs for which the Sponsor does *not* want to accept operational risk(s) and is willing to *pay* for capability solution(s). These CRs and CGs will relate to system performance metrics (KPPs, KSAs, APAs, and Other System Attributes) in sections 5 and 6 of the CDD/CPD
2. This methodology will help stakeholders associate the CDD/CPD attributes to portfolios of validated CRs that have associated CGs, making the CDD/CPD review/approval process smoother and easier

Maximum page limit for Sections 1 through 12 of CDD/CPD is 45 pages.

Top Level Content for CDD/CPD Sections 1-2

Section 1: **Operational Context** (**Establishes Context** for CRs & CGs**)**

> Cite Validated Source CR Document that ID CR's the CDD/CPD is based upon

> From Source CR Document, summarize Operational Context linked with CRs

1 ½ Pages ~ 3 Pages

ote: CDDs/CPDs must summarize operational context from the ch DOES include the CONOPs as well as Joint concepts/plans o ICD exists, then CDD/CPD Op Context must include what is normally introduced in the ICD.

> Address changes to Op Context since Source CR Document(s) were validated

> Derive from *and* be consistent with OV-1, OV-3, OV-4, and OV-5a generated during the CBA. (If not already available, generate these views before writing this section.)

> Include OV-1 and state that URL to repository for other views is in x A

these items & stop

Only provide operational *context* for CRs; CR's are defined in Section 3, NOT here

½ Page ~ 1 Page

Only provide threat *context* for CRs; CR's are defined in Section 3, NOT here

Section 2: **Threat Summary** (**Establishes Operational Effectiveness required** of CRs & CGs)

> Cite Threat Assessment (TA) used for pacing/driving threat(s) in the source CR document & latest update to that TA

Top Level Content for CDD/CPD Sections 3-4

List/discuss CRs and CGs for which the Sponsor does not want to accept risk *and* is willing to pay for Capability Solution(s)

Section 3: **Capability Discussion** (**Identifies CRs & CGs** and associated CR Documents)

5 Pages ~ 7 Pages

> List and provide overview of CRs and associated CGs
> Summarize related analysis (AoA)
> Identify FoS and SoS dependencies (SoS Sponsor is responsible for capability solutions defined in other CDDs/CPDs; remain compatible)
> Include table showing contribution this CDD/CPD & other CDDs/CPDs make to CR(s)
> Derive from *and* be consistent with SV-8 generated during the AoA, including intelligence support dependencies. (If not already available, generate this view before writing this section)

Plan to Develop and Field Capability Solution

Section 4: **Program Summary**

3 Pages ~ 4 Pages

> Discuss program approach for developing Capability Solution(s) satisfying
> Interdependencies which must be met to satisfy CR(s) & CG(s)
> Summarize Program Strategy for reaching full capability
> Define IOC & FOC to include quantities
> Discuss FoS and SoS and include FoS/SoS Table
> Derive from *and* be consistent with the OV-4

Top Level Content for CDD/CPD Sections 5-6

Section 5: **Development KPP, KSA, APA** (Solution specific Measures of Performance (MOPs))

> Discuss attributes related to all mandatory KPPs (see following slides

> Correlate each KPP, KSA, and APA to the CR defined in ICD, and Tier 1

5 Pages ~ 7 ½ Pages

As to which they contribute directly

clude rationale in terms of SSA products supported, or as being derived from

other requirements, and cite analytical references

> Include KPP Table, KSA Table, APA Table

> Derive from *and* be consistent with CV-3, SV-7, and SV-8. (If not alread available, generate these views before writing this section)

* See "Addressing Mandatory KPPs in CDD/CPD Section 5" (following)

Capability Solution Metrics

1 ½ Pages ~ 2 1/2 Pages

6: **Other System Attributes** ("boiler plate" attributes not in Secti

> Can include but not limited to: Embedded Instrumentation, Electronic Attack

(EA), Wartime Reserve modes (WARM), Human System Integration (HSI) meteorological and oceanographic (METOC), Security needs, weath

US-ratified international agreements, transportability, Space, Weight, Power and Cooling (SWaP-C)

Addressing Mandatory KPPs in CDD/CPD Section 5 (part 1 of 2)

- **There are six mandatory KPPs which must be addressed in all CDDs/CPDs.**
  - In cases where a Sponsor proposes that a particular KPP is not applicable, the document must still contain the rationale for why it is not applicable
  - A waiver of a mandatory KPP must be approved by the certification or endorsement authority prior to validation of the document
  - To prevent staffing delays, Sponsors are encouraged to engage with the applicable certification or endorsement authority AS SOON AS the sponsor determines it may propose that a KPP is not applicable
- **Force Protection KPP (Endorsing Authority is the Protection FCB Chair)*:***
  - Describes system performance metrics relative to the protection of occupants and/or non-adversary personnel
  - Parameters included in Section 5 will quantify protection from kinetic and non-kinetic fires, protection from CBRN and environmental effects, and protection from crash events
- **System Survivability KPP (Endorsing Authority is the Protection FCB Chair)*:***
  - Describes system performance metrics relative to maintaining mission capabilities of the system
  - Parameters included in Section 5 will quantify means to reduce probability of hit (kinetic/non-kinetic), reduce vulnerability if hit (kinetic/non-kinetic), and increased resiliency (CBRN/cyber effects or degraded PNT, network, etc.)
  - Discussion may also include aspects of resilient architectures and impact to quantities, CONOPS, etc. but those don't result in parameters in Section 5 for the individual system
- **Sustainment KPP (Endorsing Authority is the LOG FCB Chair):**
  - Describes system performance metrics relative to ensuring that system can be sustained in such a way that it meets warfighter needs
  - Parameters included in Section 5 will quantify availability and reliability such that the planned quantities of systems can meet operational needs under appropriate conditions
  - For consistency of document content, the "O&S Cost" KSA calculated as part of the Sustainment KPP analysis should be documented in Section 12 of the CDD/CPD rather than in the KPP/KSA/APA section of the document

Addressing Mandatory KPPs in CDD/CPD Section 5 (part 2 of 2)

- **Net-Ready KPP (Certifying Authority is the C4/Cyber FCB Chair):**
  - Describes system performance metrics relative to ensuring effective and interoperable information exchange with the external networks
  - Parameters included in Section 5 will quantify the information which must be exchanged, the networks involved, and the conditions which apply
- **Energy KPP (Endorsing Authority is the LOG FCB Chair):**
  - Describes system performance metrics relative to ensuring sufficient fuel/energy to maintain mission effectiveness
  - Parameters included in Section 5 will quantify the platform specific fuel/energy related parameters – endurance, range, fuel capacity, fuel consumption etc.
  - Discussion must include how the system parameters were derived from analysis of the most stressing scenarios from an energy perspective, to ensure a sufficient operational energy flow
    - I.e. – if conducting flight operations from a ship, and the ops tempo (of all platforms sharing the same energy source) to support the mission exceeds the planned refueling of the ship, one or more things must happen: individual platforms must be more fuel efficient (tradeoffs with individual system), ops tempo must be reduced (tradeoffs with OPLAN risks), ship must hold more fuel (tradeoffs with host platform), or oiler must visit ship more often (tradeoffs in quantity/allocation/CONOPS of logistics platforms)
    - Tradeoffs impacting external entities must be captured in the DOTmLPF-P section of the document, and associated costs captured in the Program affordability section of the document
- **Training KPP (Endorsing Authority is the J7/DDI as part of DOTmLPF-P Endorsement):**
  - Describes system performance metrics relative to required training capabilities in an operational environment
  - Parameters included in Section 5 will quantify the platform specific materiel training requirements, if any
    - I.e. – due to the long operational duration of submarines, the warfighter may specify certain operational training capabilities that MUST be a part of the operational system

Top Level Content for CDD/CPD Sections 7-9

Sections 7-9 are used by the Joint Staff to develop the following:
J2 Intel Cert
J4 Weapons Endorse
J6 NR KPP Cert

Notes:
1. J-2 Cert is required for all CDDs/CPDs.
2. J4 Endorses weapon safety in CDD/CPD if solution includes munitions.
3. J-6 NR KPP cert is required if Net Ready KPP is applicable. J-6 letter is required to verify if Net

Section 7: **Spectrum Requirements**

¼ **Page** ~ ½ **Page**

> Identify use of electromagnetic (EM) spectrum
> Ensure compliance with appropriate policy and guidance
> Used together with Net Ready KPP to obtain J6 ation

Section 8: **Intelligence Supportability** -Supports J2 Intel ation

½ **Page** ~ 1 **Page**

> Used to ensure Intel community can deliver enabling ence support
> Each Intel sub-area is listed (as applicable)

n 9: **Weapon Safety Assurance** -Supports J4 weapon endorsement

¼ **Page** ~ ½ **Page**

> Applies to all munitions that are handled, transported, used, stored
> Show compliance to appropriate weapons safety policy & guidance
> Document specific tailoring of weapons safety requirements

Top Level Content for CDD/CPD Sections 10-11

Section 10: **Technology Readiness Assessment (TRA) for CDD or Manufacturing Readiness Assessment (MRA) for CPD**

> For Draft CDD (for MS A), ID Technical Risk to be addressed in TMRR Phase

> For CDD (for MS B), ID Technical Risk to be addressed during EMD

> For CPD (for MS C), ID Manufacturing Risk to be addressed during Production

¼ **Page** ~ ½ **Page**

Base the section on TRA/MRA if completed or make it TRA/MRA like if TRA/MRA not yet completed

For each critical technology/manufacturing challenge, discuss work-around(s) available to achieve partial or complete program success if technology/manufacturing does not mature as expected

> Highlight how incremental acquisition and/or Modular Open System Architecture (MOSA) approaches enable flexibility

> Include decision points and criteria for workarounds

Supporting Items Needed To execute Acquisition And Fielding Plans

Section 11: **DOTmLPF-P Considerations.**

¾ **Page** ~ 1 **Page**

In general, for each area, identify changes to _____ which may be required to successfully implement the materiel capability solution. *DOTmLPF-P areas* have unique variations on this bullet

> Discuss DOTmLPF-P changes associated with fielding the system

> For capability solutions already addressed by Joint DCRs, cite DCR

Top Level Content for CDD/CPD Section 12

Section 12 represents a major change in CDD/CPD format that affects the entire CDD/CPD.

Section 12: **Program Affordability**

> Include Life Cycle Cost table that supports Threshold Performance: Show <u>all</u> funding types listed in JCIDS Manual, even if amount is zero. Include materiel and non-materiel (including intelligence related DOTmLPF-P) costs – should agree AT Designation. Ensure table(s) are reviewed by costs analysis organization

1 Page ~ 1 ½ Pages

escribe how $$ in table is affordable under Sponsor's 30 year TOA

> Include 30 year "sand-chart" to show how new capabilities replace old capabilities (i.e. – what goes away and what risks are taken in one area to buy down risk with a new capability in another area.)

Capability Requirement to Fielded Capability Solution Continuu

1. Capability Requirements (CRs).
    1. CRs are developed in Service approved “Strategy-to-Task” based Capabilities Based Assessments (CBAs)
    2. CRs are validated in Joint Requirements Oversight Council (JROC) or Sponsor approved Initial Capabilities Document (ICD)
    3. Joint Staff Functional Capability Boards (FCBs) and other stakeholders manage/review DoD CRs in multiple FCB CR Portfolios
    4. CRs should be written in a solution/program agnostic, testable and measureable format
    5. CRs are used to break down top level warfighting tasks (e.g. conduct air operations) into definable capabilities
    6. Example: ‘Conduct Flight Operations’ Task, can lead to ‘Operate in Degraded Visual Environment (DVE)’ CR with a specific operational Measure of Effectiveness (MOE).

2. Requirement Sponsor should assess CRs in their warfighting area, and put them into one of three categories. (This “CR assessment” is first done in a CBA.)
    1. CRs that can be fully satisfied with current and planned capabilities: DO NOTHING
    2. CRs that cannot be fully satisfied with current/planned capabilities – but Sponsor ACCEPTS RISK – DO NOTHING
    3. Same as above, but Sponsor DOES NOT WANT TO ACCEPT RISK – Sponsor funds a new program or upgrade
    4. Only items in the 3rd category need be documented in an ICD
    5. Sponsors can/should use validated CRs that were created and submitted by other Sponsors/Services when applicable
    6. Sponsors can update the scope and operational context of validated CRs, and submit the new CR for validation

3. Analysis of Alternatives (AoA) (or similar study by any other name which shapes recommendations for capability solutions)
    1. AoA ESC should review, and if needed, re-define operational context based on war-fighter inputs – capture update in CDD
    2. Evaluate specific alternatives which can provide a sound, affordable way to resolve CRs in time to meet operational need date
        1. While important, this is not the only purpose of an AoA

Capability Requirement to Fielded Capability Solution Continuu

(Continued)

4. Capability Development Document (CDD): Must be supported by and be consistent with AoA final recommendations unless otherwise directed by the post-AoA review.
5. RFP: Must be supported by and be consistent with the validated CDD. Contract RFPs cannot be written directly from AoA results, and cannot be released to industry until post-AoA review is complete and CDD is validated.
6. Source Selection: Vendor responses to RFP (not to the AoA report or findings) are evaluated by the government. This is the first time where a specific vendor approach or type of technology should be recommended for use in a capability solution.
7. Program: Engineering and Manufacturing Development (EMD) is done with selected vendors solution to satisfy CDD
8. Critical Design Review (CDR): Program Office / Materiel Command lock down production design with vendor. Requirement Sponsor drafts CPD based on CDR results
9. Operational Test: Independent check by D,OT&E and/or Sponsor Operational Test Organization to see if Program Office/Vendor's solution satisfies Sponsors CPD
10. Based on Operational Test results and Sponsor recommendations, MDA determines to approve or not approve Full Rate Production
11. Capability is fielded and sustained